



Application Number

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**IDS Flag Clearance for Application 10557285**

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**IDS Information**

| Content                               | Mailroom Date | Entry Number | IDS Review                            | Last Modified            | Reviewer    |
|---------------------------------------|---------------|--------------|---------------------------------------|--------------------------|-------------|
| M844                                  | 2005-11-18    | 8            | Y <input checked="" type="checkbox"/> | 2006-09-01<br>15:36:32.0 | BShrivastav |
| <input type="button" value="Update"/> |               |              |                                       |                          |             |

10/557285

9/13/2006 10:26:30 AM  
9/13/2006 10:30:29 AM

[File 342] Derwent Patents Citation Indx 1978-05/200607

s pn=us 6154030

S1 1 S PN=US 6154030

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SearchSave "SC475" stored  
1 Select Statement, 4 Search Term(s)  
SearchSave SC475

1 SearchSave(s), 4 Search Term(s)

map pn

SearchSave "SC476" stored  
1 Select Statement, 13 Search Term(s)  
SearchSave SC476

1 SearchSave(s), 13 Search Term(s)

[File 344] Chinese Patents Abs Jan 1985-2006/Jan

[File 347] JAPIO Nov 1976-2005/Sep(Updated 060103)

[File 350] Derwent WPIX 1963-2006/UD,UM &UP=200607

[File 371] French Patents 1961-2002/BOPI 200209

**Set        Items        Description**

S1            6      PN=CN 1518949 + PN=CN 1519578 + PN=DE 10304249 + PN=EP  
1445623 + PN=EP 1629292 + PN=GB 2400180 + PN=JP 2004236848 + PN=KR 2004071634  
+ PN=US 2004155655 + PN=US 2004183535 + PN=US 6844733 + PN=US 6903550 + PN=WO  
2004104613

10/557285

9/13/2006 10:26:30 AM  
9/13/2006 10:30:29 AM

[File 342] Derwent Patents Citation Indx 1978-05/200607

s pn=JP 2002085369

S1 1 S PN=JP 2002085369

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1 SearchSave(s), 1 Search Term(s)

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1 SearchSave(s), 2 Search Term(s)

[File 344] Chinese Patents Abs Jan 1985-2006/Jan

[File 347] JAPIO Nov 1976-2005/Sep(Updated 060103)

[File 350] Derwent WPIX 1963-2006/UD,UM &UP=200607

[File 371] French Patents 1961-2002/BOPI 200209

| Set | Items | Description                      |
|-----|-------|----------------------------------|
| S1  | 1     | PN=EP 1629292 + PN=WO 2004104613 |

1/9/1 (Item 1 from file: 344) [Links](#)

Chinese Patents Abs

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4489577

Magnetic resonance appts. with gradient coil and conductive structure

Patent Assignee: SIEMENS AG (DE)

Author (Inventor): OLIVER HEIDE (DE)

Number of Patents: 000

Patent Family:

| CC | Number  | Kind | Date             |
|----|---------|------|------------------|
| CN | 1519578 | A    | 20040811 (Basic) |

Application Data:

| CC  | Number   | Kind | Date     |
|-----|----------|------|----------|
| *DE | 10304249 | A    | 20030203 |
| CN  | 10003210 | A    | 20040202 |

1/9/2 (Item 2 from file: 344) [Links](#)

Chinese Patents Abs

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4488948

Eddy current corrention method and magnetic resonance imaging  
appts.

Patent Assignee: GE MED SYS INFORMATION (US)

Author (Inventor): UETAKE MOCHI (US)

Number of Patents: 000

Patent Family:

| CC | Number  | Kind | Date             |
|----|---------|------|------------------|
| CN | 1518949 | A    | 20040811 (Basic) |

Application Data:

| CC  | Number     | Kind | Date     |
|-----|------------|------|----------|
| *JP | 2003029096 | A    | 20030206 |
| CN  | 10003814   | A    | 20040206 |

1/9/3 (Item 1 from file: 347) [Links](#)

JAPIO

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08124089 \*\*Image available\*\*

## **EDDY CURRENT CORRECTION METHOD AND MAGNETIC RESONANCE IMAGING APPARATUS**

**Pub. No.: 2004-236848 [JP 2004236848 A ]**

**Published:** August 26, 2004 (20040826)

**Inventor:** UETAKE NOZOMI

**Applicant:** GE MEDICAL SYSTEMS GLOBAL TECHNOLOGY CO LLC

**Application No.:** 2003-029096 [JP 200329096]

**Filed:** February 06, 2003 (20030206)

**International Class:** A61B-005/055; G01R-033/389

### **ABSTRACT**

**PROBLEM TO BE SOLVED:** To perform the best eddy current correction with limited output range.

**SOLUTION:** A correction value for eddy current correction about a gradient magnetic field is calculated about a gradient magnetic field (501 to 505), when the calculated value does not exceed a predetermined upper limit value, the gradient magnetic field is corrected using the calculated value (507, 521, 525). On the other hand, when the calculated value exceeds the predetermined upper limit value, two or more gradient magnetic fields affected by eddy current are simulated using two or more correction candidate values equal to or less than the upper limit value (507 to 517), and the gradient magnetic field is corrected using the correction candidate value obtaining the relatively best gradient magnetic field (519 to 525).

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1/9/5 (Item 2 from file: 350) [Links](#)

Derwent WPIX

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0014426639 *Drawing available*

WPI Acc no: 2004-616914/200460

XRPX Acc No: N2004-487878

**Magnetic resonance instrument has a compensation coil and gradient coil structure for compensating for non-linear gradient fields**

Patent Assignee: SIEMENS AG (SIEI)

Inventor: HEID O

Patent Family ( 6 patents, 4 countries )

| Patent Number  | Kind | Date     | Application Number | Kind | Date     | Update | Type |
|----------------|------|----------|--------------------|------|----------|--------|------|
| DE 10304249    | A1   | 20040819 | DE 10304249        | A    | 20030203 | 200460 | B    |
| US 20040183535 | A1   | 20040923 | US 2004768913      | A    | 20040130 | 200463 | E    |
| GB 2400180     | A    | 20041006 | GB 20042107        | A    | 20040130 | 200465 | E    |
| CN 1519578     | A    | 20040811 | CN 200410003210    | A    | 20040202 | 200476 | E    |
| US 6844733     | B2   | 20050118 | US 2004768913      | A    | 20040130 | 200506 | E    |
| GB 2400180     | B    | 20060215 | GB 20042107        | A    | 20040130 | 200615 | E    |

#### Alerting Abstract DE A1

**NOVELTY** - Instrument has a gradient coil (21) for producing a gradient field that partially surrounds an electrically conducting structure. When the current is changed in the gradient coil an eddy current field is generated in the conducting body with the eddy current field acting to at least partially compensate a non-linear part of the gradient field in the imaging volume.

**DESCRIPTION** - Additionally a compensation coil (25) is arranged between the gradient coil and the conducting body and connected in series with the gradient coil. It generates a magnetic field that does not have a linear component and acts solely to compensate the non-linear gradient field components.

**USE** - Magnetic resonance instrument for medical diagnostic imaging.

**ADVANTAGE** - Efficient compensation of the eddy current fields is achieved.

**DESCRIPTION OF DRAWINGS** - The figure shows a longitudinal section through an inventive magnetic resonance instrument.

10 vacuum vessel

15 imaging volume

20 gradient coil system

21 gradient coil

25 compensation coil

29 gradient amplifier

**Title Terms /Index Terms/Additional Words:** MAGNETIC; RESONANCE; INSTRUMENT; COMPENSATE; COIL; GRADIENT; STRUCTURE; NON; LINEAR; FIELD

**Claim: I claim as my invention:**

**1. 1. A magnetic resonance apparatus comprising:**

- a magnetic resonance scanner having an imaging volume, a gradient coil supplied with a changing current to generate a gradient field having at least one non-linear component in said imaging volume, and having an electrically conductive structure that at least partially envelops the gradient coil, said electrically conductive structure generating an eddy current field upon a change in said current in said gradient coil, that has at least one component that compensates said at least one non-linear component of the gradient field in imaging volume; and
- a compensation coil connected in series with said gradient coil and disposed in said scanner between said gradient coil and said electrically conductive structure, said compensation coil generating a magnetic field in said imaging volume having no linear component and that compensates said at least one non-linear component of the gradient field in the imaging volume.

1/9/6 (Item 3 from file: 350) [Links](#)

Derwent WPIX

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0014393720 *Drawing available*

WPI Acc no: 2004-583062/200457

XRPX Acc No: N2004-460827

**Eddy current correction in magnetic resonance imaging apparatus involves correcting gradient magnetic field using correction value by which optimum field is obtained, when calculated value is more than specific value**

Patent Assignee: GE MEDICAL SYSTEMS GLOBAL TECHNOLOGY CO (GENE); GE MEDICAL SYSTEMS INFORMATION (GENE); UETAKE N (UETA-I)

Inventor: UETAKE N

Patent Family ( 7 patents, 36 countries )

| Patent Number  | Kind | Date     | Application Number | Kind | Date     | Update | Type |
|----------------|------|----------|--------------------|------|----------|--------|------|
| EP 1445623     | A1   | 20040811 | EP 2004250582      | A    | 20040204 | 200457 | B    |
| JP 2004236848  | A    | 20040826 | JP 200329096       | A    | 20030206 | 200457 | E    |
| US 20040155655 | A1   | 20040812 | US 2004772880      | A    | 20040205 | 200457 | E    |
| CN 1518949     | A    | 20040811 | CN 200410003814    | A    | 20040206 | 200476 | E    |
| KR 2004071634  | A    | 20040812 | KR 20047405        | A    | 20040205 | 200481 | E    |
| US 6903550     | B2   | 20050607 | US 2004772880      | A    | 20040205 | 200538 | E    |
| IN 200400119   | I1   | 20060210 | IN 2004DE119       | A    | 20040122 | 200619 | E    |

#### Alerting Abstract EP A1

**NOVELTY** - An eddy current correction value for a gradient magnetic field is calculated for correcting the field when the calculated value is less than specific value. When the calculated value is more than specific value, several gradient magnetic fields affected by eddy current, are simulated using correction values not greater than specific value. The field is corrected using the value by which optimal field is obtained.

**DESCRIPTION** - An INDEPENDENT CLAIM is also included for magnetic resonance imaging apparatus.

**USE** - For correcting eddy current in magnetic resonance imaging apparatus (claimed).

**ADVANTAGE** - Enables efficient correction of eddy current.

**DESCRIPTION OF DRAWINGS** - The figure shows the flowchart explaining eddy current correction process.

**Title Terms /Index Terms/Additional Words:** EDDY; CURRENT; CORRECT; MAGNETIC; RESONANCE; IMAGE; APPARATUS; GRADIENT; FIELD; VALUE; OPTIMUM; OBTAIN; CALCULATE; MORE; SPECIFIC

#### Claim:

1. 1. An eddy current correction method comprising:

- calculating a corrective value for eddy current correction for a gradient magnetic field;
- if the calculated value does not exceed a predetermined upper limit value, conducting correction on the gradient magnetic field using the calculated value; and
- if the calculated value exceeds the predetermined upper limit value, simulating a plurality of gradient

magnetic fields affected by eddy current using a plurality of candidate corrective values not greater than the upper limit value, and conducting correction on the gradient magnetic field using a candidate corrective value by which a relatively optimal gradient magnetic field can be obtained.

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9/13/2006 11:01:07 AM

9/13/2006 11:03:34 AM

[File 34] SciSearch(R) Cited Ref Sci 1990-2006/Jan W4

[File 434] SciSearch(R) Cited Ref Sci 1974-1989/Dec

**Set        Items      Description**

**S1            3      CR='BARTUSEK K, 1994, P 1 NOTT S MAGN RES':CR='BARTUSEK K,**  
**2006, V26, P675, APPL MAGN RESON'**

1/9/2 (Item 2 from file: 34) [Links](#)

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[SciSearch\(R\)](#) [Cited Ref Sci](#)

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14878176 **Genuine Article#:** 016NB **Number of References:** 13

**MR measurement technique of rapidly switched gradient magnetic fields in MR tomography**

**Author:** Bartusek K; Gescheidtova E (REPRINT)

**Corporate Source:** Brno Univ Technol,Fac Elect Engn & Commun, Dept Theoret & Expt Elect Engn,Kolejni 2906-4/Brno 61200//Czech Republic/ (REPRINT); Brno Univ Technol,Fac Elect Engn & Commun, Dept Theoret & Expt Elect Engn,Brno 61200//Czech Republic/; Acad Sci Czech Republ,Inst Sci Instruments,CS-61264 Brno//Czech Republic/ ( gescha@feec.vutbr.cz )

**Journal:** APPLIED MAGNETIC RESONANCE , 2005 , V 29 , N4 , P 675-686

**ISSN:** 0937-9347 **Publication date:** 20050000

**Publisher:** SPRINGER WIEN , SACHSENPLATZ 4-6, PO BOX 89, A-1201 WIEN, AUSTRIA

**Language:** English **Document Type:** ARTICLE

**Geographic Location:** Czech Republic

**Journal Subject Category:** PHYSICS, ATOMIC, MOLECULAR & CHEMICAL; SPECTROSCOPY

**Abstract:** Gradient eddy currents, induced in the surrounding conductive structures in a magnetic resonance (MR) magnet, are a major problem in MR imaging, in localized MR spectroscopy and in many other MR experiments. We present a comparison of three methods of measuring the gradient time characteristics and the time changes of basic magnetic field B-0 after the gradient is switched off. The methods are based on the selective excitation of a thin layer of the sample and on acquiring the MR signal obtained after the end of the gradient pulse and on the computation of the instantaneous frequency of the signal. At this point, the time gradient characteristic is proportional to the instantaneous frequency of the MR signal, which has a small signal-to-noise ratio. We use the characteristics measured to set the pre-emphasis parameters in a 200 MHz/200 nun MR scanner. From the results obtained by measurement it follows that all methods are convenient for simple and quick characterization of magnetic field gradient in MR tomographic magnets.

**Identifiers-- KeyWord Plus(R):** EDDY-CURRENT FIELDS; SUPERCONDUCTING MAGNET; COILS

**Cited References:**

**BARTUSEK K,** 2002, P79, IEEE C APCCAS SING

**BARTUSEK K,** 1995, V46, P339, J ELECT ENG

**BARTUSEK K,** 1993, V4, P357, MEAS SCI TECHNOL

**BARTUSEK K,** 2002, V53, P49, J ELECT ENG

1/9/3 (Item 3 from file: 34) [Links](#)

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[SciSearch\(R\)](#) Cited Ref Sci

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14028077 Genuine Article#: BCF68 Number of References: 11

Automatic adjustment of time-variant thresholds when filtering signals in MR tomography

**Author:** Gescheidtova E (REPRINT) ; Kubasek R; Smekal Z; Bartusek K

**Corporate Source:** Brno Univ Technol,Fac Elect Engn & Commun,Kolejni 4/Brno 61200//Czech Republic/(REPRINT); Brno Univ Technol,Fac Elect Engn & Commun,Brno 61200//Czech Republic/; Acad Sci Czech Republ,Inst Sci Instruments,Prague//Czech Republic/ ( gescha@feec.vutbr.cz; bar@isibrno.cz; smekal@feec.vutbr.cz )

, 2005 , V 3421 , P 384-391

**ISSN:** 0302-9743 **Publication date:** 20050000

**Publisher:** SPRINGER-VERLAG BERLIN , HEIDELBERGER PLATZ 3, D-14197 BERLIN,  
GERMANYNETWORKING - ICN 2005, PT 2

**Series:** LECTURE NOTES IN COMPUTER SCIENCE

**Language:** English **Document Type:** ARTICLE

**Geographic Location:** Czech Republic

**Journal Subject Category:** COMPUTER SCIENCE, THEORY & METHODS

**Abstract:** Removing noise from an FID signal (a signal detected in MR measurement) is of fundamental significance in the analysis of results of NMR spectroscopy and tomography. Optimum solution can be seen in removing noise by means of a digital filter bank that uses half-band mirror frequency filters of the type of low-pass and high-pass filters. A filtering method using digital filters and the approach of automatic threshold adjustment is described in the paper.

**Identifiers-- KeyWord Plus(R):** GRADIENT

**Cited References:**

**BARTUSEK K,** 2002, V53, P49, J ELECT ENG

**BARTUSEK K,** 2002, P79, P IEEE C APCCAS2002

**BARTUSEK K,** 1993, V4, P357, MEAS SCI TECHNOL

**BARTUSEK K,** 1994, P 1 NOTT S MAGN RES